

# THE NAUTILUS

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Vol. 68

OCTOBER, 1954

No. 2

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## NEW GULF OF MEXICO GASTROPODS (TEREBRA AND OCENEBRA) \*

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The Gulf of Mexico is still relatively unexplored for mollusks, and despite the occasional acquisition of new forms from shrimp fishermen, the subfaunal regions and subspeciation problems are as yet poorly understood. As more specimens from new localities appear, the morphological boundaries between some species become less pronounced, especially in such families as the Muricidae (*M. beaufi* versus *branchi*), Conidae (*C. clarki* versus *C. frisbeyae*) and the Volutidae.

During the past several years, we have had an attractive and unknown *Terebra* sent for identification by several private collectors. The unusually fine series submitted by Barbara and Dan Steger of Tampa, Florida, has prompted us to describe what we believe is a new subspecies of *Terebra floridana* Dall. The shells are quite variable in color, sculpture and proportions, but despite the obvious differences seen in the most divergent specimens, there is sufficient overlap of characters to consider it only as a subspecies. Typical *T. floridana* is known from 5 to 118 fathoms of water along the east coast from South Carolina to Key West, Florida; the subspecies described here is known from the region north of Campeche Banks, Yucatan Peninsula, Mexico.

Dall originally described *floridana* in very meager terms.

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Therefore, we are giving a fuller description and some additional records.

TEREBRA (MYURELLA) FLORIDANA Dall. Pl. 2, fig. 7

*Terebra (Subula) floridana* Dall 1889, Bull. Mus. Comp. Zool., vol. 18, pt. 2 ("Blake Report"), p. 63; 1902, Proc. U. S. Nat. Mus., vol. 24, no. 1264, p. 503, pl. 29, fig. 9; 1903, reprint of Bull. 37, U. S. Nat. Mus., pl. 75, fig. 9.

*Description.*—Shell from 50 to 75 mm. (2 to 3 inches) in length, very slender, its width being about  $\frac{1}{7}$  of its length; with 24 to 30 whorls; angle of spire about  $10^\circ$ ; color a semi-glossy, uniform, pale lemon-yellow to yellowish white; 2 nuclear whorls smooth, opaque-white, the last being slightly larger than the first postnuclear whorl. Sculpture between sutures consists of two spiral rows of short, retractively slanting axial riblets which occupy the upper two-thirds of the whorl. The ribs in the upper row (immediately below the suture) are twice as long as those in the lower row. The lower one-third area of the whorl is concave, usually smoothish, but may have very weak, protractively slanting riblets or growth lines or bear three to six weak, spiral threads or incised lines. Outer lip with a fairly strong sinuation at the periphery of the whorl. Siphonal canal fairly short and slightly twisted to the left. Columella with two very weak folds, the upper one being almost obsolete. Operculum horny, translucent-brown, quadrate ungulate.

This species is characterized by its long, slender, yellowish shell and relatively straight siphonal canal. It belongs to the subgenus *Myurella* Hinds 1845.

*Records.*—SOUTH CAROLINA: 63 miles S.E. of Charleston, 45 fms., *Pelican* station 195-7. FLORIDA: just off Grecian shoals, east side of Key Largo, 56 fms., coral sand bottom, April 9, 1886, *Albatross* station 2640 (holotype, U.S.N.M. 87222); about 6 mi. due south of Key West, 45 fms., coral bottom, bottom temp.  $75^\circ$  F, Jan. 15, 1885, *Albatross* station 2318 (paratype, U.S.N.M. 93678);  $2\frac{1}{2}$  mi. off Fowey Rocks, 36 fms., sand, bottom temp.  $74^\circ$  F, Mar. 30, 1903, *Fish Hawk* station 7517; off Sambo Reef, 118 fms., 1916, *Eolis* station 331; off Miami, 5 fms., 20 fms., 25 fms., 30 fms., 40 fms., all *Eolis* stations.

TEREBRA (MYURELLA) FLORIDANA STEGERI n. subsp.  
Pl. 2, figs. 5-6

*Description.*—Shell 50 to 80 mm. (2 to 3 inches) in length, moderately slender, its width being about  $\frac{1}{5}$  of its length. Similar to *floridana*, but differing in being stouter, in ranging in color from bright-orange, lemon-yellow to waxy white, in having the siphonal canal considerably more twisted to the left, in having weaker and more numerous axial riblets which increase in number in later whorls, and in lacking the upper fold on the columella in nearly every specimen. Operculum like that of *floridana*.

Length	Width	No. Whorls	
68.0 mm.	13.0 mm.	23	Holotype, U.S.N.M. No. 613884
69.0 mm.	11.5 mm.	25	Paratype, U.S.N.M. No. 613885
66.0 mm.	15.0 mm.	+18	Paratype, U.S.N.M. No. 605184

*Types.*—The holotype (613884) and seven paratypes (613885) are in the U.S.N.M. Two specimens from the Campeehe Banks were kindly donated by Mr. and Mrs. Jack N. Sennott. Eleven paratypes were returned to Barbara and Dan Steger, after whom this subspecies is named, and one is in the Acad. Nat. Sci. Phila. No. 191709.

*Type locality.*—50 miles west of Campeche, Yucatan Peninsula, Mexico, in 12 fathoms. Collected in 1953 by the Stegers' shrimp boat, the "Sea Hag."

*Remarks.*—There is a superficial resemblance between *steigeri* and *T. taurina* Solander (formerly *flammea* Lamarck), particularly in the early whorls. However, the much larger *taurina* differs in having a longer and straighter siphonal canal, in being spotted with color, and in having nearly twice as many, much finer, axial riblets that extend from suture to suture. The degree of slant of the riblets is about  $40^\circ$  off the axis of the shell in *taurina*, and about  $10^\circ$  in *steigeri*.

The axial riblets are coarser, larger and fewer in number in *steigeri* than those in *floridana*. In the last whorl, *steigeri* has from 28 to 39, while the latter has from 17 to 23 (rarely up to 26). The angle of spire is more variable in *steigeri*, ranging from  $14^\circ$  to  $10^\circ$  with a mean of  $13^\circ$ , while in *floridana* the range is from  $11^\circ$  to  $8^\circ$  with a mean of  $10^\circ$ . Although these differences

are mathematically small, the resulting obesity of these long shells is quite different to the eye.

We have a single specimen 55 mm. in length which has all the characters of *floridana*, except that it has numerous, brownish color flammules and weaker subsutural riblets. It was dredged in 36 fathoms by the Fish and Wildlife boat, "Pelican," 44 miles southwest of Pensacola, Escambia County, Florida (U.S. N.M. 485734). Until other specimens are collected, we refrain from naming what may be either a color form or possibly a hybrid between *floridana* and *taurina* Solander.

**TEREBRA (STRIOTEREBRUM) ARCAS n. sp. Pl. 2, fig. 4**

*Description.*—Shell 15 to 27 mm. (1 inch) in length, moderately slender, its width being about  $\frac{1}{4}$  of its length; semi-glossy, usually opaque-white, but may be blushed, particularly on the early whorls, with light yellowish orange; rarely with one wide spiral band of orange; 1½ nuclear whorls smooth, glossy, transparent and clear or tan-orange. Suture sharply impressed and wavy. Whorls convex. Axial ribs strong, smooth, moderately arched and extending uninterrupted from suture to suture; 12 to 16 ribs per whorl, with the interstices concave and with rounded sides. Spiral sculpture consists of 5 to 7 sharply incised lines which are absent or weak in the first few whorls, but become increasing strong in later whorls. Only the uppermost and strongest incised line crosses the crest of the axial ribs in some specimens. Last whorl and base well-rounded and with a total of about 16 incised spiral lines. Lower half of outer lip slightly advancing. Siphonal canal relatively large and only slightly twisted. Siphonal fasciole bordered above by a small, sharp thread. Columella with one weak, spiral fold at the base.

Length	Width	No. whorls	
27.0 mm.	7.0 mm.	15	Holotype, U.S.N.M. No. 613882
24.5 mm.	4.5 mm.	12	Paratype, Steger Collection
7.0 mm.	2.3 mm.	8	Paratype, U.S.N.M. No. 613883

*Types.*—Twenty-one paratypes were returned to the Steger collection in Tampa, Florida; one is in the Acad. Nat. Sci. Phila., No. 191712, and 8 are in the U. S. National Museum, No. 613883, including the holotype, U.S.N.M. No. 613882.

*Type locality.*—East of Arcas Cays, southern Campeche Bank, Mexico, 23 to 24 fathoms. 1953. Shrimpboat, "Sea Hag."

The type lot is apparently a mixture of the above locality and two others: 35 miles E.N.E. of Arcas Cays, 17 fathoms; and 25 miles N.N.W. of Arcas Cays, sandy mud, 26 fathoms. I suspect that the 14 young specimens, which show little spiral sculpturing, come from one locality, and that the two orange-banded specimens are from another locality.

*Remarks.*—In morphological characters, *Terebra arcas* is closest to *T. glossema* Schwengel 1940 and 1942 (see NAUTILUS, vol. 53, pl. 12 and vol. 56, p. 65, pl. 6). The latter was recorded from off Pelican Shoal, Florida Keys, and the National Museum now has specimens from 1 to 3 fathoms from Cardenas Bay, Cuba, collected by the Tomas Barrera Expedition. *T. glossema* differs in having more and less arching axial ribs (27 on the last whorl) and in having much flatter-sided whorls. Both of these species (or subspecies) somewhat resemble *T. nassula* Dall from the West Indies and the shallow-water *T. protexta* Conrad of southeast United States.

OCENE BRA (OCINEBRINA) EMPOWLUSI n. sp. Pl. 2, fig. 3

*Shell.*—Small, from 7 to 8 mm. in length, broadly fusiform, and somewhat resembling a *Favartia*; color white throughout;  $3\frac{1}{2}$  post-nuclear whorls; last whorl with 6 rounded axial, varix-like ribs; penultimate whorl with 7 to 8 similar ribs; the spiral sculpture consists of strongly raised, squarish, slightly fimbriated cords of which there are 17 to 20 on the last whorl, and 4 to 7 showing on the apical whorls. The one nuclear whorl is pronounced, glossy-white and bearing on the first half turn a strong, smooth spiral, carina, which gives the nucleus an obliquely carinate appearance; last half or third of nucleus without the carina, and succeeded abruptly by the well-sculptured post-nuclear whorls. Aperture oval, almost complete and somewhat spout-like, with a thin, sharp inner and outer lip. No anal fasciole present. Inside of outer lip with 5 or 6 weak, elongate, glossy-white teeth of spiral origin. Outer lip slightly crenulate. Siphonal canal well developed, and almost closed along its length, except for a narrow slit. To its left are the ends of 3 or 4

earlier siphonal canals which overlap each other, one inserted in the other. Operculum horny, light-brown, oval, narrowed at the siphonal end, and ungulate in structure.

Length	Width	No. whorls	
8.0 mm.	5.0 mm.	4.5	Holotype, U.S.N.M. No. 613881
7.5 mm.	4.5 mm.	4.5	Paratype, A.N.S.P. No. 191711
7.9 mm.	4.5 mm.	4.5	Paratype, D. Steger collection

*Types*.—Holotype in U.S.N.M. No. 613881; on paratype in A.N.S.P. No. 191711; three paratypes returned to the Steger collection in Tampa, Florida.

*Type locality*.—90 miles west of Fort Myers, Florida, in 90 fathoms; rubble bottom. Dredged from aboard the shrimp trawler, "Sea Hag" in 1953 by Captain M. E. Powlus, after whom the species is named.

*Remarks*.—This is the third *Ocenebra* to be described from the Western Atlantic. The first was described by C. B. Adams as *Fusus muricoides*, the synonymy of which is appended below. *Ocenebra muricoides* differs in having 9 to 10 smaller, axial ribs, in being more elongate, with a mauve-brown aperture, and in having strongly-colored, spiral bands of cream and reddish brown.

*O. emipowlusi* apparently belong to the subgenus *Ocenebrina* Jousseaume 1880, Revue et Magasin de Zool. for 1879, p. 332 (original type designated: *Fusus corallinus* Scacchi [= *O. aciculata*]). *Corallinia* Buequoy, Dautzenberg and Dollfus 1882. Moll. Marins du Roussillon, vol. 1, p. 24 and vol. 2, p. 765, is a synonym, with *aciculata* Lamarek as the original genotype designated. *Dentocenebra* Monterosato 1917, Boll. Soc. Zool. Italiana, ser. 3, vol. 4, p. 21 is a subjective synonym with *Purpura edwardsi* Payraudeau 1826 as the genotype. The latter species is closest, especially in nuclear characters, to our *O. emipowlusi*. Such Eastern Pacific species as *gracillima* Stearns, *interfossa* Carpenter, and *lurida* Middendorff apparently belong to this subgenus.

Additional anatomical studies are needed to clarify the position of the subgenus *Favartia* Jousseaume. Clench and Farfante treat it as a subgenus of *Murex* (Johnsonia, vol. 1, no. 17, p. 51), but it could probably be treated as a subgenus of *Ocenebra*.

OCENE BRA (OCINEBRINA) MINIROSEA n. sp. Pl. 2, fig. 1

*Murex (Chicoreus?) micromeris* Dall 1890, Trans. Wagner Free Inst. Sci., Phila., vol. 3, pt. 1, p. 141 (in part).

*Shell*.—Small, from 5 to 7 mm. in length, elongate-fusiform; color all pink or yellowish tan with a pink or brownish pink aperture; 4½ postnuclear whorls; last whorl with 7 to 9 rounded, axial ribs, the last of which forms a thickened varix; penultimate whorl with 9 to 11 similar ribs; spiral sculpturing consists of strongly raised, squarish cords which are crossed by distinct, crowded fimbriations. The latter are inclined to be fluted and raised into minute spine-like projections in the region of the axial ribs. The lowest cord, just above the ends of the former siphonal canals, bears 5 to 7 large, fluted scales. Last whorl with about 10 of these major spiral cords, but one or two much smaller fimbriated threads may occur between them. Nucleus with one smooth, glossy, pink or whitish whorl. Aperture oval; peristome almost complete and somewhat spout-like, with a thin, sharp inner and outer lip. Inside of outer lip with 5 or 6 weak, elongate teeth. Outer lip crenulate. Siphonal canal well developed, and almost closed along its length, except for a narrow slit. The ends of 3 or 4 siphonal canals show at the left.

Length	Width	No. whorls	
7.5 mm.	4.0 mm.	5.5	Holotype, U.S.N.M. No. 103380
5.6 mm.	3.0 mm.	5.0	Paratype, U.S.N.M. No. 416655
5.0 mm.	2.8 mm.	4.5	Paratype, U.S.N.M. No. 416655

*Type locality*.—Jamaica, West Indies. Dredged by the "Albatross," but no station record; probably off Kingston.

*Types and records*.—Holotype, U.S.N.M. No. 103380 from Jamaica; paratypes in U.S.N.M. from Boqueron Bay, Puerto Rico (161271); St. Thomas (103413); 1 mi. southeast of Fowey Light, Florida, in 25 fathoms by the "Eolis" Station 8 (416653); off Bear's Cut, Miami, in 18 to 20 fathoms, "Eolis" Station 113 (416655); off Government Cnt, Miami, in 35 to 38 fathoms, "Eolis" Station 117 (416654).

*Remarks*.—*Ocenebra minirosea* is similar to Dall's *O. micromeris* described from the Caloosahatchie Pliocene beds of Florida, but differs from that species in being more elongate,

with more strongly fimbriated sculpturing, and in having one or two additional, more pronounced axial ribs per whorl. One might suspect that *micromeris* was a progenitor of the Recent *minirosea*.

OCENEBRA (OCINEBRINA) MURICOIDES (C. B. Adams)  
Pl. 2, fig. 2

*Fusus muricoides* C. B. Adams 1845, Proc. Boston Soc. Nat. Hist., vol. 2, p. 3 (Jamaica).

*Ricinula muricoides* C. B. Adams, Clench and Turner, 1950, Occ. Papers on Mollusks (Cambridge, Mass.), vol. 1, no. 15, pl. 39, fig. 9.

*Tritonalia (Ocenebra) caribbaea* Bartsch and Rehder, Smithsonian Misc. Coll., vol. 98, no. 10, p. 7, pl. 1, fig. 1 (Old Providence Island).

We are adding the above synonymy of the third Western Atlantic species of *Ocenebra*, and a figure of the holotype of *Tritonalia caribbaea* Bartsch and Rehder which appears to be a synonym of *O. muricoides* C. B. Adams.

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### SOME NOTES ON THE RADULA

BY S. C. HOLLISTER

During the course of a recent field trip to Sanibel Island, Florida, when the writer attempted to relate juvenile to adult stages among some of the *Fasciolaria* by means of radula characters, it was discovered that the number of cusps on the laterals of *F. gigantea* vary with the length—hence with the age—of the shell. Collecting was at once begun of other species, and subsequently specimens of several series have been examined. The accompanying chart (Fig. 1) gives the relation between the length of the shell and the number of cusps on the lateral plates for *F. gigantea* Kiener and *F. tulipa* Linné.

Two species of *Busycon* were also examined, *B. "contrarium"* B. Smith (= *B. perversum* of authors) and *B. carica* Gmelin. The laterals of this genus have two large cusps with smaller